

**PITCHER-SHAPED ACTIVE AREA FOR FIELD EFFECT TRANSISTOR AND
METHOD OF FORMING SAME**

ABSTRACT OF THE DISCLOSURE

An improved pitcher-shaped active area for a field effect transistor that, for a given
5 gate length, achieves an increase in transistor on-current, a decrease in transistor serial
resistance, and a decrease in contact resistance. The pitcher-shaped active area structure
includes at least two shallow trench insulator (STI) structures formed into a substrate that
defines an active area structure, which includes a widened top portion with a larger width
than a bottom portion. An improved fabrication method for forming the improved pitcher-
10 shaped active area is also described that implements a step to form STI structure divots
followed by a step to migrate substrate material into at least portions of the divots, thereby
forming a widened top portion of the active area structure. The fabrication method of
present invention forms the pitcher-shaped active area without the use of lithography, and
therefore, is not limited by the smallest ground rules of lithography tooling.